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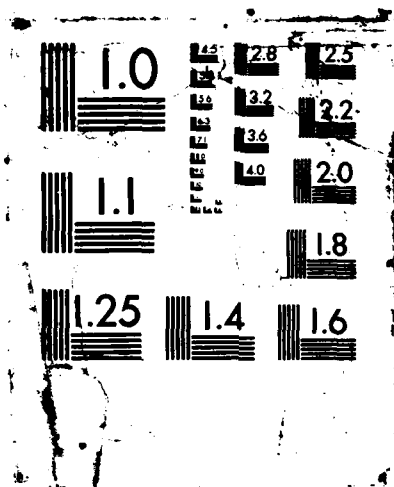
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REPORT LMSC/F247006

MAXIE 1

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23 March 1988

Progress Report for period 1 Jan 1988 - 31 Mar 1988
Contract N00014-87-C-0050

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) <p>  The satellite flight of the MAXIE-1 (Magnetospheric Atmospheric X-ray Imaging Experiment) instrument is being implemented under ONR (the Office of Naval Research) sponsorship. The MAXIE-1 instrument is being developed as a joint activity of Lockheed, the Aerospace Corporation, and the University of Bergen; much of the Lockheed development has been done under the Independent Research Program. Under ONR sponsorship that institution is responsible for managing the program, for providing spacecraft interface requirements, for providing interface electronics for conditioning sensor signals, for developing test software and for conducting environmental tests needed for flight. This report describes some of the interface activities undertaken in the last three months including the Interface Critical Design Review. Interactions have continued with co-investigators at the Aerospace Corp. and at the University of Bergen. A common board has been designed to condition spacecraft signals so as to make them compatible with the MAXIE instrument and vice-versa for the MAXIE signals. A breadboard of this common board has been fabricated and tested. </p>				
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Preface

The MAXIE-1 instrument is being developed as a joint activity of Lockheed, the Aerospace Corporation, and the University of Bergen. By mutual agreement the MAXIE-1 fabrication effort is being split approximately equally among these three co-investigator institutions. Many of the concepts in MAXIE-1 were developed since 1984 under an LMSC continuing Independent Research program. The detailed design and fabrication of the instrument at Lockheed is being completed under the continuing Independent Research Program.

The satellite flight of MAXIE-1 as the ONR-401 experiment is being implemented under the present contract with ONR. In this contract Lockheed has overall responsibility for the activities required to test in satellite flight the MAXIE-1 instrument. The program management activities include the interface with appropriate government agencies. Under ONR sponsorship, Lockheed is also responsible for conducting environmental tests needed for flight and the development of spacecraft interface requirements. Aerospace is responsible for procuring and testing the sensors, for design and fabrication of part of the mechanical configuration, and for development of the ground support equipment. The prime responsibilities of the University of Bergen center around the electronic controlled motion systems. These activities at the Aerospace Corporation and at the University of Bergen are funded by separate sources. Additional instrument development items in MAXIE-1 for the ONR-401 flight experiment, such as a microprocessor interface for the on-orbit operations of a satellite-borne x-ray imaging experiment, are being funded by NASA headquarters to Lockheed.

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The following activities are being pursued under the present contract;

- 1) management of the program with responsibility for interfacing with the appropriate government agencies
- 2) provide interface electronics for on-board conditioning of sensor signals
- 3) development of the software for test and calibration of the flight units
- 4) perform environment and systems tests for the ONR-401 experiment

Introduction

The interactions with co-investigators and with government agencies have continued while the instrument design and fabrication progresses. In this report the activities in the last 3 months are discussed.

Activities in the Last Quarter

On January 11-12 a MAXIE meeting was held at LPARL with representatives from NASA/GSFC (J. Hayes, L. Griner and J. Knoll); Lt. G. Smith, STP representative at GSFC, and with representatives of the Space Sciences Laboratory at LPARL. Much of the discussion at this informal meeting was concerned with planning the Interface Critical Design Review.

A MAXIE Technical Information Exchange Meeting was held at LPARL on February 9-10. The meeting was attended by representatives from the USAF, NASA, RCA, The Aerospace Corp., and Lockheed. The principal objective of the meeting was to review in detail the interface between the MAXIE experiment and the TIROS satellite, and all felt that the objectives were successfully accomplished.

On March 16-17 an Interface Critical Design Review for the MAXIE experiment to be flown as the ONR 401 experiment was hosted by the Space Sciences Laboratory at LPARL. Representatives of ONR, NASA (GSFC), NOAA, USAF, and STP were present. Presentations were made by V. Chinn, R. Vondrak, W. Imhof, H. Voss, F. Hilsenrath and L. Johmann of Lockheed and three of the Aerospace Co-Investigators. The program was well received with no major issues being raised, but several helpful suggestions were made.

A common board was designed to condition the spacecraft command signals so as to make them compatible with the MAXIE electronics. In turn, the MAXIE output signals with a 0 - 5 volt amplitude are converted in the common board to 0 - 10 volt signals to be compatible with the spacecraft requirements. The breadboard of the common board has been designed, and the artwork has been laid out. Now the artwork has been sent to have printed circuit boards made. Some revisions were made in the design and these have been reviewed favorably by RCA.

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